Effects of Exercise and Nutrition On Metabolism
America Stereotype:
Health Risks of Overweight and Obesity

- Type 2 diabetes

- Heart disease

- High blood pressure

- Nonalcoholic fatty liver disease (excess fat and inflammation in the liver)

- Osteoarthritis (pain, swelling, stiffness in joints)

- Cancer (breast, colon, endometrial, kidney)

- Stroke

Ogden & Carroll, 2010; Flegal et al., 2012
Adults Age 20 and Older

- 68.8% of adults are considered to be overweight or obese
- 35.7% of adults are considered obese
- 6.3% have extreme obesity
- 74% of men are considered overweight or obese
- 36% of both men and women are obese
- 8% of women are considered extremely obese

Ogden & Carroll, 2010; Flegal et al., 2012
Trends in Overweight and Obesity among Adults in the US from 1962-2010

Ogden & Carroll, 2010; Flegal et al., 2012
Children and Adolescents Ages 6–19 Getting at Least 60 Minutes per Day of Physical Activity, United States, 2003–2004

Troiano et al., 2008
Recommendations (3-5 days a week)

- **Prevent weight gain** -- 150-250 minutes/week of moderate-intensity physical activity. More than 150 minutes/week of moderate-intensity physical activity is associated with modest weight loss.

**Weight loss** -- 150-250 minutes/week of moderate-intensity physical activity provides only modest weight loss. Greater amounts (i.e. >250) provide clinically significant weight loss.

**Maintenance** -- >250 minutes/week of moderate-intensity physical activity will prevent weight re-gain.

- Energy/diet restriction of 2,000 calories or less combined with physical activity will increase weight loss as compared to diet alone.

2009 issue of Medicine & Science in Sports & Exercise®, the official journal of the American College of Sports Medicine.
Efficient (optimal) Metabolic Rate as RMR

-200 \rightarrow \text{Weight (pounds) } \times 10 \rightarrow +200

1600 \rightarrow \text{180pnds } \times 10 \rightarrow 2000

(1800 Calories)
Resting Metabolic Rate

2,327 Calories per Day

Gender - Female
Height - 5’4
Weight - 180 pounds
Body Fat - 38.5%
Calorie Deficit

RMR: 2000 calories
BMR: 1500 calories
Lifestyle Burn: 450 calories
Activity Burn: 400 calories
850-1350 calorie burn

3500 calories per pound
Metabolism Factors

Diagram showing various factors affecting metabolism, including:
- Height
- Weight
- Muscle
- Gender
- Hormones
- Genetics
- Age

Metabolism Factors
1 pound of Fat = Increases RMR 3-5 points

1 pound of Muscle = Increases RMR 4-6 points

More Muscle = Higher Metabolism = More Fat Burn
15 foods that will
Boost your metabolism
Metabolism Boosters

1) **Get up and Move**- 10 minutes every hour
2) **Get More Sleep**- 7-8 hours of sleep every night
3) **Get in the Sauna**- 3 times a week
4) **Eat More Protein**- Fist sized portion at every meal (two for men)
5) **Strength Train**- 2-3 days per week
6) **Get out in the Sun**- Vitamin E
7) **Interval Training**- 1-2 Sessions of High Intensity Intervals a week (Cardio)
8) **Drink more Water**- Half your body weight in ounces
9) **Manage Stress**- Read, warm bath, yoga, meditation, etc. 5- 20min
10) **Limit Alcohol**- Disrupts sleep and body fat stores
Why you eat every 3hrs

Breakfast  Snack  Lunch  Snack  Dinner  Snack
Macronutrients

**Protein**: .8g of protein per pound of bodyweight (4 calories per gram)

**Fats**: 34% of BMR-RMR (9 calories per gram)

**Carbohydrates**: The rest of Calorie allotment (4 calories per gram)
Subject 1

Calories Utilization / Heart Beats

Zone 1
103 - 133

Zone 2
134 - 141

Zone 3
142 - 138

Zone 4
159 - 176

Zone 5
177 - 196

Calories Utilization / Heart Beats

Zone 1
92 - 142

Zone 2
143 - 154

Zone 3
155 - 162

Zone 4
163 - 176

Zone 5
177 - 196

LIFETIME TRAINING
Subject 1
Subject 1

Total Calories Per Minute

Fat Calories Per Minute
Subject 1

Peak VO2 (ml/kg/min)

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<th>Date</th>
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Weight and Body Fat %

<table>
<thead>
<tr>
<th>Date</th>
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<td>1-21-2017</td>
<td>287.8</td>
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Subject 2
Subject 2
Subject 2

Total Calories Per Minute

Fat Calories Per Minute
Subject 2

Peak VO2 (ml/kg/min)

Weight and Body Fat %
Food is the most abused anxiety drug. Exercise is the most underutilized antidepressant.